Table 3.5-1. Comparison of Alternatives

Discipline	No Action Alternative 1	No Action Alternative 2 (Power Island)	Proposed Action (Power and Gasification Islands)
Land Use	No new land disturbance would occur at the project site location. Mitigation: None anticipated.	Disturb approximately 121 hectares (300 acres) of previously disturbed land for project construction activities. The process area will occupy approximately 4.8 hectares (12 acres). No effects on surrounding land uses or local land use plans or policies are expected. Mitigation: None anticipated.	Disturb approximately 121 hectares (300 acres) of previously disturbed land for project construction activities. The process area and storage facilities will occupy approximately 7.6 hectares (19 acres). No effects on surrounding land uses or local land use plans or policies are expected. Mitigation: None anticipated.
Socioecomonics	No increase in new employment or workers would be expected. The employment and population in the region of influence (ROI) would remain the same. Mitigation: None anticipated.	Construction would generate approximately 120 jobs during the six-month construction phase with peak employment reaching 200 workers. Additional indirect employment of 138 to 230 jobs would be created based on the duration of peak construction levels. The 20-year operation period would require 24 workers and indirectly create an additional 54 jobs. There would likely be no change to the level of community services provided in the ROI. Mitigation: None anticipated.	Construction would generate approximately 600 jobs during the 30-month construction phase with peak employment reaching 1,000 workers. Additional indirect employment of 690 to 1,150 jobs would be created based on the duration of peak construction levels. The 20-year operation period would require 120 workers and indirectly create an additional 270 jobs. Population may increase in the ROI, but no impact is expected in the level of community services provided. Mitigation: None anticipated.
Cultural Resources	No impacts to cultural resources would occur at the project site location. Mitigation: None anticipated.	Because the site has been previously disturbed, implementation of the No Action Alternative 2 would likely result in negligible impacts to cultural resources, although a potential for subsurface discoveries exists. Mitigation: If resources are encountered during construction, procedures planned by Global Energy, Inc., would be followed upon discovery. Should any discoveries occur, the Kentucky State Historic Preservation Officer (SHPO) would be notified and construction in the area would cease until a qualified archaeologist could evaluate the findings and SHPO concurrence was obtained.	Because the site has been previously disturbed, implementation of the Proposed Action would likely result in negligible impacts to cultural resources, although a potential for subsurface discoveries exists. Mitigation: If resources are encountered during construction, procedures planned by Global Energy, Inc., would be followed upon discovery. Should any discoveries occur, the SHPO would be notified and construction in the area would cease until a qualified archaeologist could evaluate the findings and SHPO concurrence was obtained.

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Aesthetic and Scenic Resources	The existing project site location visual setting would not change, nor would area scenic resources be affected. Mitigation: None anticipated.	The combined cycle units would not be visible from outside of the site area. No visible plumes are associated with the combined cycle units. Fugitive dust during construction may temporarily affect visibility. Mitigation: Standard dust control measures would be implemented. Additional mitigation is not anticipated.	The combined cycle units would not be visible from outside of the site area. No visible plumes are associated with the combined cycle units. Fugitive dust during construction may temporarily affect visibility. The gasifier facility stacks and plumes would likely be visible from the City of Winchester, the community of Trapp, and the Pilot Knob State Nature Preservation. Fugitive dust during construction may affect visibility temporarily. Mitigation: Standard dust control measures would be implemented. Additional mitigation is not anticipated.
Geology	No impacts to geology or geologic resources would occur at the project site location. Mitigation: None anticipated.	Minor impacts on the geology and geologic resources due to disturbances associated with construction, parking, and construction laydown areas are expected, however, the site has been previously graded. Mitigation: Runoff and erosion controls, dust controls, and reuse of stockpiled soil.	Minor impacts on the geology and geologic resources due to disturbances associated with construction, parking, and construction laydown areas are expected, however, the site has been previously graded. Slightly greater impacts to prime farmland soils than No Action Alternative 2 are expected from the construction of additional support facilities. Mitigation: Runoff and erosion controls, dust controls, and reuse of stockpiled soil.

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Air Resources	No impacts to air resources would occur at the project site location. Mitigation: None anticipated.	Increases in annual air emissions of NO_x, SO_x, PM_{10}, and ROG would result from the facility. The highest emissions would be in the form of NO_X (approximately 1,100 TPY), CO (approximately 800 TPY), and SO_X (approximately 500 TPY). The facility would also emit approximately 2.1 million TPY of CO_2. Pollutant emissions and levels would be well within applicable standards. No significant air quality impacts are expected from facility operation. Mitigation: Emission control equipment would be included in facility design.	Increases in annual air emissions of NO_x, SO_x, PM_{10}, and ROG would result from the facility. The highest emissions would be in the form of NO_X (approximately 1,100 TPY), CO (approximately 800 TPY), and SO_X (approximately 500 TPY). An increase in PM_{10} emissions of approximately 15 percent over No Action Alternative 2 would occur. Hazardous air pollutant emissions would increase by 9.07 TPY. The facility would also emit approximately 2.1 million TPY of CO_2. Pollutant emissions and levels would be well within applicable standards. No significant air quality impacts are expected from facility operation. Mitigation: Emission control equipment would be included in facility design.
Water Resources	No impacts to water resources would occur at the project site location. No activities would occur that could potentially affect wetlands and surface waters. Mitigation: None anticipated.	The facility would require 3.8 MLD (1 MGD) of surface water from the Kentucky River. Project operations would generate less than 1.5 MLD (0.4 MGD) of wastewater. Treated wastewater would be discharged to the Kentucky River in compliance with the site-specific Kentucky Pollutant Discharge Elimination System (KPDES) permit, resulting in negligible impacts. During seven-day low flow conditions, the facility would withdraw one percent of the flow of the Kentucky River. No use of or discharge into groundwater resources during construction or operation would occur. Mitigation: None anticipated beyond project design, including permit requirements, and administrative controls.	The facility would require a total of 15.1 MLD (4 MGD) of surface water from the Kentucky River. Project operations would generate 1.5 MLD (0.4 MGD) of process wastewater. Treated wastewater would be discharged to the Kentucky River in compliance with the site-specific KPDES permit, resulting in negligible impacts. The other 13.6 MLD (3.6 MGD) is used in the operation of the gasifier, turbine condenser, and fuel gas saturation process, as well as other miscellaneous uses. During seven-day low flow conditions, the facility would withdraw four percent of the flow of the Kentucky River. No use of or discharge into groundwater resources during construction or operation would occur. Mitigation: None anticipated beyond project design, including permit requirements, and administrative controls.

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Ecological Resources	There is no potential to affect federally-listed plant and animal species, or species identified by other Federal and/or state agencies at the project site location. Mitigation: None anticipated.	Since no Federal- or State-listed protected, sensitive, rare, or unique species have been identified at the project site location, no impacts would be expected. In addition, the proposed site location does not contain suitable habitat for the federally endangered running buffalo clover. Approximately 4.8 hectares (12 acres) of old-field vegetation and habitat would be lost from construction of the proposed facility. Mitigation: Post-construction mitigation landscaping consisting of a control program for non-native invasive plants should be adopted.	Since no Federal- or State-listed protected, sensitive, rare, or unique species have been identified at the project site location, no impacts would be expected. In addition, the proposed site location does not contain suitable habitat for the federally endangered running buffalo clover. Approximately 7.6 hectares (19 acres) of old-field vegetation and habitat would be lost from construction of the proposed facility and support structures. Mitigation: Post-construction mitigation landscaping consisting of a control program for non-native invasive plants should be adopted. The Federal Aviation Administration would require stack lighting for the gasifier stacks to prevent bird strikes from occurring .
Noise	No noise impacts would occur since no construction activities would be taking place. Mitigation: None anticipated.	Short-term minor increase in noise during construction and operation. Vehicle traffic would cause minor noise increases over background levels in the community of Trapp. Mitigation: None anticipated.	Short-term minor increase in noise during construction and operation. Vehicle and rail traffic would cause minor noise increases over background levels in the community of Trapp. Mitigation: None anticipated.

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Traffic and Transportation	No adverse traffic or transportation impacts. Mitigation: None anticipated.	Increase in road traffic from construction and operation of facility. Depending on the level of construction activity occurring on-site, 100 to 160 vehicle trips per shift change would occur. Approximately 40-60 heavy duty truck trips per day would be made to and from the project site. Railcars would move heavy equipment to the site during construction as needed. Approximately 40 vehicle trips per day would be made during operation, all utilizing Kentucky Highway 89. No railcars would be required for operation. Mitigation: Installation of turning lanes or traffic control devices (i.e., stop lights) at the intersection of Kentucky Highway 89 and the facility service road.	Increase in traffic associated with construction. Approximately 500 to 830 vehicle trips per shift change, depending on the level of construction occurring, and 40-60 heavy-duty truck trips per day would be made to and from the project site. Railcars would move heavy equipment to the site during construction as needed. Approximately 160 additional vehicle trips per day would be made all utilizing Kentucky Highway 89 during operation. Approximately one unit train (100 rail cars) movement would be made in or out of site per day during facility operation. Existing rail infrastructure onsite is sufficient to accommodate a full unit train. Mitigation: Worker transportation options such as car pooling could be considered. Installation of turning lanes or traffic control devices (i.e., stop lights) at the intersection of Kentucky Highway 89 and the facility service road. Implementation of directional controls for the service road should also be considered.
Occupational and Public Health and Safety	No occupational and public health and safety impacts. Mitigation: None anticipated.	Typical worker impacts present in the construction industry would be associated with facility construction. No significant occupational or public health and safety impacts are expected during facility operation. All noise and health impacts would be mitigated using typical industry safety measures. Mitigation: Typical industry safety measures would be implemented.	Typical worker impacts present in the construction industry would be associated with facility construction. No significant occupational or public health and safety impacts are expected during facility operation. All noise and health impacts would be mitigated using typical industry safety measures. Mitigation: Typical industry safety measures would be implemented.

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Waste Management	No change to existing facility services within the J.K. Smith Site. Mitigation: None anticipated.	Facility construction and operation would generate small quantities of hazardous and non-hazardous wastes and waste water. Mitigation: Typical industry measures would be implemented to minimize waste generation. Hazardous wastes would be disposed in approved hazardous waste landfills outside of Kentucky.	Facility construction would generate small quantities of hazardous and non-hazardous wastes and wastewater over the 30 month construction period. Operation would generate larger quantities of wastewater and hazardous wastes than No Action Alternative 2. The gasifiers would produce large quantities of vitrified frit and elemental sulfur, which would be marketable. Mitigation: Typical industry measures would be implemented to minimize waste generation. Hazardous wastes would be disposed in approved hazardous waste landfills outside of Kentucky. Should the vitrified frit be shown to be hazardous, it would also be disposed in approved hazardous waste landfills.

Note: MGD = million gallons per day; TPY = tons per year; MLD = million liters per day.